REMARKS

After entry of this amendment, claims 112–240 will be pending. Claims 136, 138–139, 148–149, and 184 have been cancelled. New claims 234 - 240 have been added.

Claim 118 has been amended to address the Examiner's objection regarding the inadvertent omission of a hyphen in the term "etch-stop."

Basis for the amendments to claims 112, 118, 135, 137, 140–142, 144–147, 155, 159–160, 163, 166, 171, 177, 181, 183, 185, 188, and 190 and for new claims 233–241 may be found, for example, in Figure 11 and related text; the table on page 18, line 9 and related text; page 28, lines 4–7, and the originally filed claims. Applicants submit that no new matter has been introduced by these amendments.

Claims 112–138, 144–150, 171, 172, 176, 179, 180, 199, 201–203, 205, 212, 213, 215, 218, 221, 222, 229, 230, and 231 are rejected under the doctrine of obviousness-type double patenting as being unpatentable over claims 1–9, 15, 24, 33, 37–42, 48, 89, 90, 94, and 97 of U.S. Patent No. 6,689,211 ("the '211 patent"). In response, Applicants provide herewith a terminal disclaimer against the '211 patent.

Applicants note with appreciation that the Examiner has indicated that claims 140–143, 155, 159–162, 166–170, 177, 178, 181, 182, 188–197, 200, 204, 208–211, 214, 216, 217, 219, 220, 223–228, and 232 would be allowable if rewritten in independent form.

Applicants have rewritten each of claims 140–142, 155, 159–160, 166, 177, 181, 188, and 190 in independent form. Additional amendments have been made to some claims, e.g., to claim 159, to more clearly describe the invention. Claim 143 is dependent on amended independent claim 142, claims 161–162 are dependent on amended independent claim 160, claims 167–170 are dependent on amended independent claim 166, claim 178 is dependent on amended independent claim 177, claim 189 is dependent on claim 188, claims 191–197 are dependent on claim 190; these claims are patentable in that they depend on allowable claims.

Claim 200 is dependent on amended claim 198 that is patentable for the reasons described below. Claims 204, 208–211, 214, 216, 217, 219, 220, and 223–228 are dependent on claim 201 that is patentable for the reasons described below. Claim 232 is dependent on claim 229 that is patentable at least in view of the terminal disclaimer mentioned above.

A typographical error on page 13, line 4 of the application, noted by the Examiner, has been corrected.

Rejections under 35 U.S.C. §102

Claims 112–115, 117–125, 130–132, 135–139, 144–148, 150–154, 156–158, 163–165, 171–176, 183–187, 198, 199, 201–203, and 205–207 are rejected as directly anticipated by Chu et al., U.S. Patent No. 5,906,951 ("Chu"). Claims 135 and 183 are also rejected as directly anticipated by Godbey et al., U.S. Patent No. 5,013,681 ("Godbey").

With regard to claims 112 and 171, Chu teaches a structure having a doped etch-stop layer with a dopant concentration ranging from $5x10^{19}$ to $5x10^{20}$, with better selectivity at higher doping levels. See column 2, lines 60–66. Chu does not teach an etch-stop layer having a doping level below 10^{18} atoms/cm^3, as recited in amended independent claims 112 and 171. Applicants submit that, for at least this reason, these claims are allowable over Chu.

With regard to claims 135, 147, and 183, Chu teaches a $Si_{1-x}Ge_x$ etch-stop layer that is strain-free, i.e., relaxed, with x ranging from 0.2 to 0.5. See, e.g., column 2, lines 57–64 and Figure 1. Chu does not teach a strained-Si etch-stop layer, as recited in amended independent claims 135, 147, and 183. Applicants submit that, for at least this reason, these claims are allowable over Chu.

Godbey teaches a strained $Si_{1-x}Ge_x$ etch-stop layer. See, e.g., column 3, lines 13–17. This layer is characterized as a strained alloy layer. See column 4, line 60. The various options taught for this alloy include $Si_{1-x}Ge_x$ with x = 0.1–0.5, as well as alloys consisting of silicon and

other group IV elements such as tin and lead. See column 3, lines 50–59. Godbey does not teach a strained Si etch-stop layer, as recited in amended independent claim 135. Applicants submit that, for at least this reason, amended claim 135 is allowable over Godbey.

With respect to claims 144 and 151, Chu teaches a structure having a single etch-stop layer, i.e., a relaxed p^{++}-doped $Si_{1-x}Ge_x$ etch-stop layer. See, e.g., Figure 2 and related text. Chu does not teach a layer structure including two etch-stop layers, i.e., a uniform etch-stop layer and a strained etch-stop layer, as recited in amended independent claim 144 and in independent claim 151. Applicants submit that, for at least this reason, these claims are allowable over Godbey.

With respect to claim 163, Chu teaches bonding a Si layer disposed over an etch-stop layer to a second substrate. See, e.g., Figure 2 and related text. Chu does not teach bonding an etch-stop layer directly to a handle wafer, as recited in amended independent claim 163. Applicants submit that, for at least this reason, claim 163 is allowable over Chu.

With respect to claim 183, Godbey teaches forming a strained $Si_{1-x}Ge_x$ etch-stop layer. See, e.g., column 3, lines 13–17. This layer is characterized as a strained alloy layer. See column 4, line 60. The various options taught for this alloy include $Si_{1-x}Ge_x$ with $x = 0.1–0.5$, as well as alloys consisting of silicon and other group IV elements such as tin and lead. See column 3, lines 50–59. Godbey does not teach forming a strained Si etch-stop layer, as recited in amended independent claim 183. Applicants submit that, for at least this reason, claim 183 is allowable over Godbey.

With respect to claim 198, Chu teaches forming a relaxed etch-stop layer. See Figure 2 and related text. Chu does not teach a strained etch-stop layer as recited in amended independent claim 198. Applicants submit that, for at least this reason, claim 198 is allowable over Chu.

With respect to claim 201, Chu teaches forming a structure having a single etch-stop layer. See, e.g., Figure 2 and related text. Chu does not teach forming a structure having two etch-stop layers, as recited in independent claim 201. Applicants submit that, for at least this reason, claim 201 is allowable over Chu.

Applicants submit that all dependent claims are patentable for at least the reasons the independent claims are patentable, as outlined here.

Supplemental Information Disclosure Statement

A Supplemental Information Disclosure Statement, a PTO-1449 form, and copies of the cited references are submitted herewith. Please consider the cited references, and return a copy of the initialed PTO-1449 form to the undersigned.

CONCLUSION

In light of the foregoing, Applicants respectfully submit that all claims are now in condition for allowance.

If the Examiner believes that a telephone conversation with Applicants' attorney would expedite allowance of this application, the Examiner is cordially invited to call the undersigned attorney at (617) 310-8327.

A check for $1,548.00 for the extra claim fee, the Supplemental Information Disclosure Statement fee, and terminal disclaimer fee is enclosed. Please charge any other fee occasioned by this paper to our Deposit Account No. 20-0531.

Respectfully submitted,

Date: August 30, 2004
Reg. No.: 44,381

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